

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A composite system for ~~protecting a substrate from a fire or other hyperthermal conditions, the system comprising a substrate, a lower layer of an a polymeric coating of~~ active fire protective material applied above the substrate, and an upper layer of an a polymeric coating of ablative fire protective material applied to the lower layer, the ablative material forming an open cell matrix when exposed to fire or other hyperthermal conditions to permit passage of gasses from the lower layer to ambient, the system protecting the substrate from the hyperthermal conditions.

2. (previously presented) The system of claim 1 wherein the upper layer comprises at least about 7% by weight refractory fillers.

3. (previously presented) The system of claim 1 wherein the upper layer comprises at least 15% by weight refractory fillers.

4. (previously presented) The system of claim 1 wherein the upper layer comprises at least 20% by weight refractory fillers.

5. (previously presented) The system of claim 2 wherein the refractory fillers are selected from the group comprising glass, graphite, and ceramic.

6. (previously presented) The system of claim 2 wherein the refractory fillers increase reradiation of heat by the upper layer.

7. (original) The system of claim 1 wherein the system is capable of protecting against jet fires for a period of time at least 30% greater than is provided by a coating of the same thickness of either the upper layer or the lower layer.

8. (original) The system of claim 1 further comprising a mesh or fabric reinforcement embedded in the system.

9. (original) The system of claim 1 wherein the lower layer has a thickness of about 1 to about 25 mm.

10. (original) The system of claim 1 wherein the lower layer has a thickness of about 2 to about 15 mm.

11. (original) The system of claim 10 wherein the upper layer has a thickness of about 2 to about 6 mm.

12. (original) The system of claim 1 wherein the upper layer has a thickness of about 1 to about 25 mm.

13. (original) The system of claim 1 wherein the upper layer has a thickness of about 1 to about 6 mm.

14. (previously presented) A composite system capable of protecting a substrate from a jet fire, the system comprising a lower layer of an active fire protective material which swells when exposed to a fire or other hyperthermal condition and an upper layer of a fire protective material which when exposed to a fire or other hyperthermal condition swells to form an open cell matrix to permit passage of gasses from the lower layer to ambient, the upper layer swelling less than the lower layer, the upper layer comprising a fill of refractory material comprising at least about seven percent of the upper layer by weight.

15. (original) The system of claim 14 wherein the upper layer comprises at least 15% by weight refractory material.

16. (previously presented) The system of claim 15 wherein the refractory material is selected from the group comprising glass, graphite, and ceramic.

17. (original) The system of claim 14 wherein the system is capable of protecting against jet fires for a period of time at least 30% greater than is provided by a coating of the same thickness of either the upper layer or the lower layer.

18. (original) The system of claim 14 further comprising a mesh or fabric reinforcement embedded in the system.

19. (original) The system of claim 14 wherein the lower layer has a thickness of about 1 to about 25 mm.

20. (original) The system of claim 14 wherein the lower layer has a thickness of about 2 to about 6 mm.

21. (original) The system of claim 20 wherein the upper layer has a thickness of about 2 to about 6 mm.

22. (original) The system of claim 14 wherein the upper layer has a thickness of about 1 to about 25 mm.

23. (original) The system of claim 1 wherein the upper layer has a thickness of about 1 to about 6 mm.

Claims 24-44 canceled without prejudice.

45. (currently amended) The system of claim 1 wherein the system consists essentially of the substrate, the lower layer and the upper layer, the

system being free of mesh or fabric reinforcement embedded in the upper layer or lower layer.

46. (previously presented) The system of claim 45 further comprising a primer layer applied to the substrate.

47. (previously presented) The system of claim 45 further comprising a topcoat.

48. (previously presented) The system of claim 1 wherein the upper layer comprises from 10% to 25% of a blowing agent which changes from solid to gas at a hyperthermal temperature to which the composition may be subjected, and at least 7% of a refractory filler.

49. (previously presented) The system of claim 1 wherein the ablative material swells by about 10% to 100% of its initial thickness when exposed to hyperthermal conditions.

50. (previously presented) The system of claim 8 wherein the reinforcement comprises a graphite fabric.

51. (previously presented) The system of claim 8 wherein the reinforcement comprises a metal mesh.

52. (previously presented) The system of claim 1 wherein the active fire-protective material swells when exposed to hyperthermal conditions to form a char having a thickness two to five times the thickness of the layer as applied.

53. (previously presented) The system of claim 52 wherein the ablative material swells by about 10% to 100% of its initial thickness when exposed to hyperthermal conditions.

54. (previously presented) The system of claim 52 wherein the ablative material comprises a fill of at least 25% by weight of refractory material.

55. (new) A composite system capable of protecting a substrate from a jet fire, the system comprising

a lower layer of an active fire protective material which swells when exposed to a fire or other hyperthermal condition, the lower layer comprising 30% to 70% by weight of a polymeric resin and 20% to 50% gas formers, the lower layer having a thickness of about 1 to about 15 mm, and

an upper layer of a fire protective material which when exposed to a fire or other hyperthermal condition swells to form an open cell matrix to permit passage of gasses from the lower layer to ambient, the upper layer comprising 35% to 65% by weight of a polymeric resin, 5% to 30% gas formers, and about 10% to about 40% refractory fillers, the upper layer having a thickness of about 1 to about 6 mm,

the upper layer containing, on a weight percent basis, less gas formers and more refractory fillers than the lower layer.

56. (new) The system of claim 55 wherein the upper layer and the lower layer comprise the same resin.

57. (new) The system of claim 55 wherein the upper layer and the lower layer comprise an epoxy resin.

58. (new) The system of claim 56 wherein at least the epoxy resin of the upper layer comprises a flexibilizing agent.

59. (new) The system of claim 58 wherein the flexibilizing agent comprises a polysulfide.

60. (new) The system of claim 55 further comprising a mesh or fabric reinforcement embedded in the system.

61. (new) The system of claim 1 wherein the upper layer has a thickness of about 2 to about 6 mm and the lower layer has a thickness of about 2 to about 15 mm.